

REMARKS / ARGUMENTS

Claims 9 and 10 have been objected to because “SMD” was not preceded by its meaning. This has been corrected. Accordingly, the objection is deemed to be overcome.

Claims 1, 2-7, and 13, 14-19 have been rejected under 35 USC 112, second paragraph. These claims have been amended to repair all antecedent basis problems relating to “the four sides”. Accordingly, the rejection is deemed to be overcome.

Claims 9 and 10 have been rejected under 35 USC 112, second paragraph. These claims have been amended to repair all antecedent basis problems relating to “the SMD”. Accordingly, the rejection is deemed to be overcome.

Claims 1-4, 7, 11-16, and 19 were rejected under 35 USC 102(b) as being anticipated by Suzuki et al. (US Pat. 4,504,969) (“Suzuki”). Generally, Suzuki merely teaches a rectangular pattern recognition device which operates “to recognize and note the position of solid-line rectangles drawn on an input form, document, or the like.” (Abstract) By contrast, Applicant’s invention locates and characterizes a generally rectangular-shaped object in an image by creating an

abstract model of the generally-rectangular shaped object, as made more clear in the amended preamble of amended claim 1.

Although Suzuki does receive an image, Suzuki is silent on identifying boundary data objects in the image, where each boundary data object represents a **single** point in the image having a **quantified** location and orientation, as now required by the second element of amended claim 1. Instead, Suzuki only shows rectangles in Fig. 3, not single points, instead showing that the rectangles are composed of line segments. This is explained at col. 2, lines 55-63. Fig. 3 does not show any specified quantified orientation, only specifying relative orientation with respect to “the scanning direction” (col. 2, lines 60-61), and mutual orthogonality, e.g., “made perpendicular thereto” (col. 2, lines 63-64). Thus, the second element of amended claim 1 is not taught by Suzuki.

Likewise, the amended third element requires “using the boundary data objects”, so it too is not taught by Suzuki.

Further, the Examiner is wrong to assert that “the features illustrated in Figure 3 are in direct agreement with applicant’s own description of the claimed feature”. Amended claim 1 now more clearly states that a boundary data object is a single point, not a line segment, or a rectangle, as shown in Fig. 3.

Using Applicant’s definition of a boundary data object, it is now clear that Figs. 3 and 5 of Suzuki do NOT show “finding a first set of lines defined by groups of boundary data objects that lie generally along the direction of the primary angle”, since neither Fig. 3 or Fig. 5 show any boundary data objects, only line segments. Thus, the fourth and fifth elements are not taught by Suzuki.

The last element of amended claim 1 is also not taught by Suzuki, since Suzuki does not teach an abstract model of a generally rectangular shaped object in an image, instead merely operating “to recognize and note the position of solid-line rectangles drawn on an input form, document, or the like.” (Abstract)

Regarding claim 2, since amended claim 2 refers to a side of the “generally rectangular shaped object” to be modeled using an “abstract model”, and since Suzuki is silent on these aspects, the rejection of claim 2 is now moot. Further, claim 2 depends from claim 1, herein deemed allowable. Accordingly, the rejection of claim 2 is deemed to be overcome.

Regarding claim 3, since Suzuki is silent on boundary data objects, which are required by claim 3, the rejection of claim 3 is deemed to be overcome.

Regarding claim 4, since Suzuki does not disclose an “abstract model of the generally rectangular shaped object”, which is required by amended claim 4, the rejection of claim 4 is deemed to be moot, and the rejection is therefore deemed to be overcome.

Regarding claim 7, since Suzuki does not teach “abstract models of the generally rectangular shaped object”, now required by amended claim 7, the rejection of claim 7 is deemed moot, and the rejection is deemed to be overcome.

Appl. No. 09/688,205
Amdt. dated 07/17/2004
Reply to Office action of March 17, 2004

Regarding claim 11, amended claim 11 now requires "forming an abstract rectangular model generally conforming to the rectangular shaped object". Suzuki does not teach this limitation, and so the rejection of claim 11 is made moot. Suzuki also does not teach "boundary data objects". Thus, two elements of claim 11 are absent from Suzuki. Accordingly, the rejection of claim 11 is deemed to be overcome.

Regarding claim 12, this claim depends from a claimed deemed herein to be allowable. Accordingly, this claim is also deemed allowable, and thus, the rejection of claim 12 is deemed to be overcome.

Regarding claim 13, this claim is analogous to claim 1, and thus the arguments for allowability are analogous to those of claim 1. Thus, the rejection of claim 13 is deemed to be overcome.

Regarding claims 14, 15, 16, and 19, these claims are analogous to claims 2, 3, 4, and 7, and thus the arguments for allowability are analogous to the arguments for allowability for claims 2, 3, 4, and 7. Thus, the rejection of claims 14, 15, 16, and 19 are deemed to be overcome.

Claim 8 has been rejected under 35 USC 103(a) as being unpatentable over Sarachik (US Pat. 6,078,700) ("Sarachik") in view of Suzuki. Claim 8 has been substantially amended such that it is more clear that "boundary data objects" are required, and creating an "abstract model of the SMD" involves many steps not taught by either Suzuki or Sarachik.

For example, Sarachik does not teach an abstract rectangular model with four sides selected from pairs of lines, as now required in amended claim 8. In fact, nowhere in Sarachik is a figure showing such an abstract rectangular model, instead showing sets of image features, as in Figs. 5 and 6. Further, Sarachik fails to remedy the deficiencies in Suzuki as set forth in the discussion of the rejection of claim 1, above. For example, Sarachik does not teach either "identifying pairs of lines for forming an abstract rectangular model", or "boundary data objects". Thus, combining Sarachik with Suzuki would not provide Applicant's invention.

Further, Sarachik actually teaches away from Applicant's invention, in that Sarachik matches based on the finer features, such as the leads, of an electronic device (as in Figs. 2, 5, and 6), while Applicant's invention ignores such features, seeking to create only an **abstract rectangular model** of the electronic device (see, for example, Fig. 5C of the Specification). Accordingly, the rejection of claim 8 has been rendered moot by the extensive amendment, and the rejection of amended claim 8 is thereby overcome.

Appl. No. 09/688,205
Amdt. dated 07/17/2004
Reply to Office action of March 17, 2004

Regarding claim 9, the abstract model additionally includes position and orientation information of the SMD in the received image. The Examiner cites Fig. 2 of Sarachik, however, Fig. two only shows co-linear feature sets of an electronic component. Further, col. 5, lines 25-54 do NOT discuss **an abstract rectangular model**, as now required by amended claim 9. Also, col. 5, lines 25-54 do not mention “**orientation** information” at all. Moreover, claim 9 depends from herein deemed allowable claim 8. Accordingly, claim 9 is also deemed to be allowable.

Claim 10 has been canceled, without prejudice.

The prior art made of record and not relied upon does not appear to present an impediment to the allowance of the present application.

Appl. No. 09/688,205
Amdt. dated 07/17/2004
Reply to Office action of March 17, 2004

Accordingly, Applicants assert that the present application is in condition for allowance, and such action is respectfully requested. The Examiner is invited to phone the undersigned attorney to further the prosecution of the present application.

Respectfully Submitted,

Dated: 7/17/04



Russ Weinzimmer
Registration No. 36,717
Attorney for Applicants

P.O. Box 862
Wilton, NH 03086

Tel: 603-654-5670
Fax: 603-654-3556